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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/725,327 | 12/02/2003 | Katsura Ito | Q78609 | 2696 |

7590 07/28/2005

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3213

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| EXAMINER |
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NGUYEN, CAM N

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| ART UNIT | PAPER NUMBER |
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1754

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/725,327

Applicant(s)

ITO ET AL.

Examiner

Cam N. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on July 05, 2005 (a response & an RCE).
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. <u>7/06/05</u> . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Response to status of an RCE application

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after the final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 7/05/05 has been entered.

Claim Rejections - 35 USC § 102(e)

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Taoda et al., "hereinafter Taoda", (US Pat. 6,090,736).

The applied reference has a common inventors (Ito and Hagihara) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e)

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might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Taoda discloses a photocatalytic powder for environment clarification, comprising finely divided titanium dioxide particles having a coating of porous calcium phosphate formed on at least part of the surface of each finely divided titanium dioxide particle, wherein an anionic surface active agent is present at least one the interface between said coating of porous calcium phosphate and the finely divided titanium dioxide particle (see col. 10, claim 1). The finely divided titanium dioxide particles have an average primary particle diameter of from about 0.001 μm to about 0.2 μm (see col. 10, claim 2). The finely divided titanium dioxide particles are in the form of a powder comprising primary dispersion particles produced by the gaseous phase reaction starting from a titanium halide (see col. 10, claim 3). The anionic surface active agent is disclosed at col. 4, ln 27-41. An aqueous slurry used for dispersing the finely divided titanium dioxide particles therein contains an anionic surface active agent and titanium dioxide particles (see col. 10, claim 6). Taoda further discloses when the finely divided titanium dioxide particle used supports onto the surface thereof a metal, such as platinum, rhodium, ruthenium, palladium, silver, copper, iron or zinc, the catalytic action of the metal further enhances the environmental clarification effect, such as decomposition-removal of organic compounds or killing of bacteria or molds (see col. 7, ln 10-15). The photocatalytic powder can be applied to a polymer shaped article, such as an organic

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fiber or a shaped plastic article, composed of an organic polymer. Suitable organic polymers including the claimed polymers (see col. 7, ln 16-32). Taoda further discloses a polymer composition comprising an organic polymer and about 0.01 to about 80% by weight, based on the weight of the polymer composition, of a photocatalytic powder for environmental clarification; said photocatalytic powder comprising finely divided titanium dioxide particles having a coating of porous calcium phosphate formed on at least part of the surface of each finely divided titanium dioxide particle, wherein an anionic surface active agent is present at least on the interface between said coating of porous calcium phosphate and the finely divided titanium dioxide particle (see col. 11- col. 12, claim 11).

Taoda discloses the claimed subject matter, thus anticipates the claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taoda et al., "hereinafter Taoda", (US Pat. 6,090,736), as applied to claims 1-18 above, and further in view of Suzuki et al., "hereinafter Suzuki", (US Pat. 5,965,479).

Taoda discloses a photocatalytic powder as described above, except for the activated carbon and/or zeolite.

However, it would have been *prima facie obvious* to one of ordinary skill in the art

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at the time the invention was made to have incorporated such known activated carbon into the organic polymer of Taoda to achieve an improved organic polymer having enhanced in removing efficiency of harmful substances, as evidenced by Suzuki (see Suzuki at col. 1, ln 19-24). Specifically, Suzuki fairly discloses an activated carbon consisting essentially of activated carbon particle and titanium dioxide fine particles having an average particle size of not more than 10 Tm, and containing a suitable binder, including thermosetting resins and the like (see Suzuki at col. 12, claim 1 & col. 8, ln 18-34).

Response to Arguments

6. Applicants' amendment/response filed on July 05, 2005 has been fully reconsidered, but not deemed persuasive for the same reasons as set forth in previous office actions.

Further, examiner reviewed both journal articles that applicants submitted "Interaction of Pyrophosphate with Calcium Phosphates" and "Journal of Membrane Science by S. Lee et al." It would appear that the first article discusses the crystal growth of the calcium phosphate and the S. Lee et al. article discusses the titanium dioxide, the material that the ceramic membranes were composed of, has a zero point charge on the electrokinetic potential value. It is considered these articles do not provide sufficient evidence or address the interactions between the two-layer photocatalytic powder (the claimed invention) and the three-layer photocatalytic powder (the Taoda invention).

It is considered since both the Taoda and the claimed photocatalytic powders contain the same TiO_2 and anionic surface agent, it is inherent that the photocatalytic powder of Taoda also possesses the same electrokinetic potential values.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

8. Claims 1-19 are pending. Claims 1-19 are rejected. No claims are allowed.
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cam N Nguyen, whose telephone number is 571-272-1357. The examiner can normally be reached on M, W, R, & F, 8:45 AM - 5:15 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nguyen/cnn *cnn*
July 25, 2005

Cam Nguyen
CAM N. NGUYEN
PRIMARY EXAMINER
AM-1754